

ORIGINAL

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of)

Amendment of the Commission's Rules)
to Establish Rules and Policies)
Pertaining to a Mobile Satellite)
Service in the 1610-1626.5/)
2483.5-2500 MHz Frequency Bands)

CC Docket No. 92-166

RECEIVED

MAY - 5 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

COMMENTS
OF
AMSC SUBSIDIARY CORPORATION

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SUMMARY

The LEOs appear to have captured the imagination of the Commission with the image of a small handheld wireless telephone that will provide two-way communications worldwide. The image is almost utopian in its appeal, that LEO technology will instantly bring the advantages of modern times to the most remote corners of the globe and at the same time boost U.S. technology leadership and exports.

AMSC shares with the Commission a long-term vision of the power of U.S. communications technology to improve the quality of life and foster economic development at home and abroad. AMSC disagrees, however, with the LEO-specific image of this future that characterizes the Commission's NPRM and led the Commission to propose excluding geostationary satellite systems from the 1.6/2.4 GHz bands. GSO systems are capable of nearly all the positive characteristics ascribed to LEOs by the Commission and in many respects are technically and financially superior to LEOs. In particular, a domestic GSO system such as that proposed by AMSC represents a far more practical approach to putting the new MSS spectrum to use and to laying the foundation for the expansion of high-quality, two-way mobile voice service globally by satellite.

As few as three geostationary satellites can cover the entire globe (except for the highest latitudes) and can do so more efficiently than LEOs by focusing satellite antenna power on areas of the globe that have greater demand for mobile satellite service. Geostationary satellites are particularly efficient in

providing dispatch services, for which there is heavy demand by the transportation industry.

From a business perspective, geostationary satellites have the advantage of offering relatively little technology risk and permitting incremental growth -- using experience and resources gained from initial service to a relatively wealthy, high-demand region such as North America to expand service to other regions.

The Commission should look objectively at the image of the LEO systems' technical capability. Contrary to their image, the LEO systems will provide virtually no service to handhelds inside buildings or vehicles. The use of handheld telephones simply does not permit sufficient power to provide other than line-of-sight service. So, instead of the image projected by the LEOs of world travellers in a foreign meeting room pulling their sleek portable phones from their jacket pockets to stay in touch back home, the image should be of constantly missed calls and executives wandering around searching for a clearance from which they can get enough signal strength for enough time to make and complete a call.

Moreover, for all their favorable publicity, the LEO proposals continue to face a number of substantial obstacles which the Commission should examine objectively before it makes any licensing decisions regarding the new MSS spectrum. One such set of obstacles concerns the large number of inter-service sharing issues that must be resolved before the LEOs may access spectrum here and abroad. The NPRM concedes that there is an

insufficient record at this time to propose a resolution of many of these issues.

There are other substantial questions that also remain concerning the LEO proposals. These include: (i) the LEOs' potential role in creating a problem of space debris; (ii) the political hurdles the proponents must overcome to establish landing rights; and (iii) the financial hurdles the LEOs must overcome to construct and operate their typically very expensive systems. As to this last point, none of the LEO applicants has yet demonstrated that it can meet the Commission's basic financial qualifications standard. Inmarsat's recent decision to reject low-Earth orbit technology as uneconomical for its next generation system should serve as further cause for skepticism about the financial viability of at least four of the non-geostationary system applicants.

By contrast, AMSC, which has proven its ability to implement its vision of improved communications for rural and remote areas, offers a practical alternative to the Commission putting all of its eggs into a LEO basket. AMSC has demonstrated that it can add these frequencies for no more than \$10 million to its already-authorized second and third satellites and that these frequencies are urgently needed for the development of its service to the United States. Moreover, AMSC also has demonstrated (and the Commission has accepted) that AMSC can share these bands with the other CDMA LEO systems. Thus, The Commission can permit both AMSC and the LEOs to go forward. By taking this approach, the Commission will greatly add to the

likelihood that this valuable, newly-allocated spectrum is actually put to use to the benefit of the public -- regardless of the success or failure of the LEOs.

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COMMENTS OF AMSC SUBSIDIARY CORPORATION

AMSC Subsidiary Corporation ("AMSC") hereby submits its comments on the Notice of Proposed Rulemaking, 9 FCC Rcd 1094 (1994) (the "NPRM") issued by the Commission in the above-referenced docket.^{1/} AMSC supports the Commission's proposal to proceed expeditiously with the licensing of systems to use the newly-allocated 1.6/2.4 GHz Mobile Satellite Service ("MSS") bands.^{2/} AMSC urges the Commission, however, not to preclude the licensing of systems deploying satellites in geostationary orbit ("GSO systems").^{3/} The spectrum at issue is too valuable

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- 1/ AMSC is the licensee of the U.S. Mobile Satellite Service system and an applicant to use the bands at issue here.
- 2/ In its recent Report and Order in ET Docket No. 92-28, 9 FCC Rcd 536 (1994) ("Allocation Report and Order"), the Commission adopted AMSC's proposal to reallocate the 1610-1626.5/2483.5-2500 MHz bands to Mobile Satellite Service. These frequencies are referred to in the NPRM as the "1.6/2.4 GHz bands." The adjacent bands include MSS allocations in what are often referred to as the "upper L-band" (1545-1559/1646.5-1660.5 MHz) and the "lower L-band" (1525-1545/1626.5-1646.5 MHz).
- 3/ Geostationary satellite systems are sometimes also referred to as "GEOs." Non-geostationary satellite systems, which
(continued...)

and the proposals of the non-GSO applicants too speculative, particularly relative to that of AMSC, for the Commission to rule out GSO systems. AMSC filed a timely application to use these frequencies and has shown that it can do so efficiently and can share the bands with the other applicants. Thus, permitting AMSC to remain a regional GSO system is the best approach to insuring that the spectrum is put to good use and can be done without having a significant impact on the non-GSO applicants.

Background

The Development of AMSC's System. AMSC brings to this proceeding tremendous long-term experience in the development of MSS systems. Several of the shareholders of AMSC participated in the initial developmental applications for a U.S. MSS system, filed as early as 1982. Those applications led ultimately to the Commission's grant in 1989 to AMSC's parent corporation, American Mobile Satellite Corporation, to build and operate the U.S. MSS system.^{4/} Since then, AMSC has withstood substantial legal

3/ (...continued)

include those proposing low-Earth orbit, medium-Earth orbit and elliptical orbits, are often grouped together under the heading of "LEOs," and generally are referred to here as "non-GSO systems." The "GSO/non-GSO" distinction is somewhat arbitrary, for as discussed in the attached Technical Appendix, each of the applicants at issue actually proposes a distinct system design with its own satellite orbit.

4/ See Memorandum Opinion, Order and Authorization, Gen. Docket No. 84-1234, 4 FCC Rcd 6041 (1989), vacated in part sub nom. Aeronautical Radio, Inc. v. FCC, 928 F.2d 428 (D.C. Cir. 1991). See also Tentative Decision, Gen. Docket No. 84-1234, 6 FCC Rcd 4900 (1991); Final Decision on Remand, Gen. Docket No. 84-1234, 7 FCC Rcd 266 (1992), aff'd sub nom.
(continued...)

challenges to the Commission's licensing process, has met the technical challenges of developing its state-of-the-art system, and has passed the scrutiny of the public equity markets.

Despite these challenges and with minimal delay, AMSC is poised to launch and begin operating in 1995 an historic, \$600 million U.S. Mobile Satellite Service system. For the first time anywhere in the world there will be a dedicated satellite system capable of providing thousands of channels of high-quality, two-way mobile voice communications over an area covering millions of square miles of land, air and water. Mobile users will be able to travel practically anywhere in the United States and not see a "No Service" light.

The magnitude of AMSC's undertaking should not be underestimated. It took the backing of such communications industry leaders as GM Hughes Electronics Corporation, McCaw Cellular Communications, Inc. and Mobile Telecommunications Technologies Corporation, with additional financing from Singapore Telecommunications Ltd. In December 1993, the public invested \$178 million in AMSC through an Initial Public Offering that was the largest single IPO for a new venture in the U.S. in 1993.^{5/}

The first satellite, AMSC-1, will be the largest and most powerful commercial mobile satellite ever launched, more than 10

^{4/}(...continued)

Aeronautical Radio, Inc. v. FCC, 983 F.2d 275 (D.C. Cir. 1993).

^{5/} Udayan Gupta, "Firms Backed by Venture Capitalists Do Well in IPOs," Wall Street Journal (January 14, 1994), at B2.

times as powerful as the most recent Inmarsat satellites. The satellite substantially advances the state-of-the-art in satellite technology by, among other things, employing two unfurlable antennas that will generate multiple spot beams, the power of which can be increased as needed to focus on areas of high demand. This deployment of spot beam technology and flexible power management will greatly promote spectrum efficiency and frequency reuse on both a regional and a worldwide scale.

The development of the ground segment has required similar technological advances. The development of AMSC's mobile terminals has led to the production of antennas that are a better combination of high performance, small size and low price than any mobile antennas produced previously. AMSC's advanced network software will enable users to send and receive voice, data, and facsimile transmissions both between mobile terminals and in connection with the public switched telephone network. AMSC's system development also has included the enabling of automatic roaming from terrestrial cellular systems to the AMSC satellite, a major technical achievement. Moreover, AMSC's system has a sophisticated design to provide automatic preemptive access to aeronautical safety communications, thereby allowing the system immediately to facilitate communications in the event of air emergencies.

AMSC's system will have a significant impact on the creation of well-paid, skilled jobs for U.S. workers. The attached study prepared by AMSC (Exhibit A) indicates that over the next seven

years, the development of AMSC's system alone will provide an average of over 2000 jobs a year for U.S. workers -- building the space and ground segment and marketing the service -- not to mention the many thousands of additional jobs that will result from the ripple effect of this employment on the economy generally and the export of this technology to other countries and regions that seek to emulate the success of the American model. For instance, Westinghouse Electric, which is producing mobile terminal for AMSC's system, already has a contract to provide the same mobile terminal hardware to an Australian MSS system.

Perhaps the biggest hurdle to the development of the U.S. MSS system has been the severe shortage of spectrum. The principal international allocations for MSS mobile links have been in the L-band. Initially, the spectrum was allocated in part to maritime MSS and in part to aeronautical MSS. The U.S. had led an effort to reallocate the spectrum more efficiently as generic MSS spectrum, but the only such generic allocation internationally at this time is in the bands that are the subject of this rulemaking. AMSC was the first to propose the allocation of these bands to MSS from their previous allocation for Radiodetermination Satellite Service.^{6/}

Meanwhile, the demand for spectrum by foreign MSS systems has left the upper and lower L-band MSS frequencies extremely

^{6/} See Petition of AMSC, RM-7806 (June 3, 1991) ("AMSC Petition").

congested. Over 40 foreign systems currently are operating or are planned for the spectrum.

While AMSC hopes to secure access to as much as 20 MHz of the upper and lower L-band spectrum for its initial satellite, the full development of AMSC's system will require access to additional spectrum in a few years. This situation, which prompted AMSC in 1991 to file the application at issue here, has only gotten worse in the ensuing years. AMSC's market research indicates that demand for AMSC's services is likely to exceed its capacity by 1998, even with access to 20 MHz in the upper and lower L-bands.

As described in AMSC's application, its interest has been principally in using the 1.6 GHz uplink band to add capacity to its second and third satellites. These frequencies are so close to frequencies already assigned to AMSC that they can be added to AMSC's satellites at a nominal cost of as little as \$1 million per satellite. While the 2.4 GHz downlink band is presently limited in its utility due to the presence of other users, it too can be added to AMSC's satellites at a very reasonable cost. AMSC has identified other downlink bands that it would prefer to use instead of the 2.4 GHz band, but AMSC is prepared if necessary to use that band as well.^{1/}

^{1/} AMSC has proposed using frequencies in the 1515-1525 MHz band as matching downlink spectrum, and AMSC believes that MSS systems can share the 1515-1525 MHz band with aeronautical telemetry users. See Consolidated Opposition of AMSC to Petition to Deny, File Nos. 15/16-DSS-MP-91 (January 31, 1992), Annex to Technical Appendix; Further Reply of AMSC, RM-7400 (October 18, 1990), Technical Appendix. Alternatively, AMSC proposed a ten megahertz
(continued...)

The Non-GSO Applicants. There are five other entities that met the Commission's cut-off request for applications to use the new MSS bands, all proposing to operate non-geostationary satellite systems. These are: Constellation Communications, Inc. ("Constellation"); Ellipsat Corporation ("Ellipsat"); Loral Qualcomm Satellite Services, Inc. ("LQSS"); Motorola Satellite Communications, Inc. ("MSCI"); and TRW Inc. ("TRW").

AMSC has submitted substantial evidence on the record in this proceeding that establishes the many serious obstacles that these applicants face.^{8/} These include: (i) concerns with the unreliability of the system technical designs (e.g., substandard coverage, frequent call blockages, disruptions and system outages);^{9/} (ii) questions as to whether the non-GSO system proponents will be capable of financing their extremely expensive

7/ (...continued)

segment of either: the 1850-1990 MHz band, the 2110-2130 MHz band, or the 2160-2180 MHz band.

8/ See AMSC Petition at 21-26 & Technical Appendix; Response of AMSC, File Nos. 11-DSS-P-91(6) et al. (August 5, 1991) ("August 1991 Response"), at 5-13 & Technical Appendix; Opposition of AMSC, RM-7771 et al. (October 16, 1991) ("October 1991 Opposition"), at 7-11 & Technical Appendix; Petition to Deny of AMSC, File Nos. 17-DSS-P-91(48) et al. (December 18, 1991) ("December 1991 Petition"), at 6-14 & Technical Appendix; Consolidated Reply of AMSC, File Nos. 17-DSS-P-91(48) et al. (March 27, 1992) ("March 1992 Reply"), at 13-24 & Technical Appendix; Comments of AMSC, ET Docket No. 92-28 (December 4, 1992) ("Allocation Comments"), at 11-15 & Technical Appendix; Reply Comments of AMSC, ET Docket No. 92-28 (January 6, 1993) ("Allocation Reply Comments"), at 13-16.

9/ See AMSC Petition at 23 & Technical Appendix at 46-55; August 1991 Response at 10, 13 & Technical Appendix at 10-24; October 1991 Opposition at 10-11 & Technical Appendix at 6-11, 24-27; December 1991 Petition at 11-12 & Technical Appendix at 5-10; March 1992 Reply at 22-24 & Technical Appendix at 27-28.

systems;^{10/} (iii) an enormous number of in-band and out-of-band inter-service sharing issues in both the 1.6 GHz and the 2.4 GHz bands domestically and internationally;^{11/} (iv) the existence of several proposed foreign MSS systems seeking to use the 1.6/2.4 GHz bands;^{12/} and (v) a risk of serious harm to the orbital environment from a substantial increase in the likelihood of an in-orbit collision.^{13/}

While AMSC has consistently questioned the feasibility of the proposed non-GSO systems, it has worked with the non-GSO system proponents toward finding a solution by which all of the applicants -- GSO and non-GSO -- can carry out their plans for the newly-allocated MSS bands. AMSC has stated that, if necessary, it will modify its proposal to employ CDMA in order to share the newly-allocated MSS spectrum (including the 2.4 GHz

^{10/} In estimates provided several years ago, Constellation estimated the cost to construct, launch and operate its proposed system for one year to be \$292 million; Ellipsat, approximately \$230 million; LQSS, \$748 million; MSC1, more than \$3.7 billion; and TRW, \$1.3 billion.

^{11/} See AMSC Petition at 19, 22-23 & Technical Appendix at 2-26; August 1991 Response at 5-9 & Technical Appendix at 1-10; October 1991 Opposition at 8-10 & Technical Appendix at 1-6, 12-18, 20-22; December 1991 Petition at 7-10 & Technical Appendix at 1-5; March 1992 Reply at 14-21 & Technical Appendix at 3-20; Allocation Comments at 11-15 & Technical Appendix at 2-11.

^{12/} Inmarsat, Canada, Germany, Saudi Arabia, and Tonga all have Advance Published proposed GSO and non-GSO MSS systems in the 1.6/2.4 GHz bands with the International Frequency Registration Board.

^{13/} See Reply of AMSC, Gen. Docket No. 89-554 (January 8, 1991), Technical Appendix, at 4-6 & Ex. 5; AMSC Petition at 24; August 1991 Response at 11; December 1991 Petition at 12; March 27 Response at 24 & Technical Appendix at 29-30.

downlink band) with the proposed non-GSO systems.^{14/} AMSC participated actively in the Negotiated Rulemaking Committee ("NRMC") in this proceeding. There, AMSC demonstrated to the satisfaction of all parties that AMSC can share the new MSS spectrum with the proposed non-GSO systems using CDMA.^{15/}

The Commission's Actions and Proposals. In January 1994, the Commission released a Report and Order allocating the 1.6/2.4 GHz bands to Mobile Satellite Service.^{16/} The Allocation Report and Order specifically addresses the issue of the ability of GSO and non-GSO MSS systems to share the bands. The Commission notes that the MSS NRMC considered the sharing issue and "concluded that MSS sharing between LEO and GEO systems is possible if both types of systems use the same access techniques and if the sharing is limited to frequencies not used for bi-directional operations." Allocation Report and Order, 9 FCC Rcd at 539 para. 16. Based on this record, the Commission concludes that "it is possible for LEO and GEO satellite systems to share the available spectrum with each other and with other existing services using the bands if appropriate sharing constraints are applied to MSS operations." Id. at 539 para. 18.

14/ See Allocation Comments at 19; Allocation Reply Comments at 16.

15/ See document MSS/IWG1-31 of the NRMC, February 11, 1993. See also Report of the MSS Above 1 GHz NRMC, e.g., Attachment 1 to Annex 1, Summary, ¶(a) and (d), and Attachment 2 to Annex 1, Tables 1.1 and 1.2.

16/ Allocation Report and Order, 9 FCC Rcd 634. See supra note 2.

The Notice of Proposed Rulemaking was issued shortly after the Allocation Report and Order. The bulk of the NPRM concerns the development of licensing procedures for systems that seek to use the new MSS spectrum.^{17/} The Commission's first decision regarding licensing, and the one that AMSC is most concerned with, is its proposal to limit the use of the new MSS bands to non-GSO satellite systems. In a relatively brief discussion of the issue, the Commission cites what it sees as unique attributes of non-GSO systems that support its proposed restriction:

(i) that non-GSO systems are a new technology; (ii) that non-GSO systems operate at lower altitudes than GSO satellites, which shortens the transmission time between satellite and earth station and permits communications at a lower power than GSO systems; (iii) that non-GSOs provide enhanced coverage to areas at higher latitudes; (iv) that non-GSO systems are an alternative to GSO technology for U.S. customers; and (v) that non-GSO systems provide inherently global coverage, which may spur a greater U.S. presence in the world economy, add to U.S. competitiveness and provide an advanced communications infrastructure at low cost to poorer countries.^{18/}

^{17/} By "licensing," the NPRM makes clear that the Commission recognizes that its jurisdiction is limited, inasmuch as the systems that seek to offer global service also will need authority from each of the foreign countries in which they propose to offer service. NPRM, 9 FCC Rcd at 1140 paras. 91-92.

^{18/} NPRM, 9 FCC Rcd at 1105-06 paras. 20-21. Without mentioning AMSC, the Commission notes that domestically the service "will help meet the demand for a seamless, nationwide communications system that is available to all and that can offer a wide range of voice and data telecommunication

(continued...)

In addition to the proposed requirement that all systems be non-geostationary, the Commission proposes that all systems provide coverage at least 18 hours per day at latitudes less than 80 degrees and continuous coverage at any point in all 50 states, except for brief outages when the signal is blocked by obstructions such as foliage, buildings or terrain or degraded by occasional propagation phenomena. NPRM, 9 FCC Rcd at 1106-07 paras. 23-24.^{19/} The Commission also proposes to require all applicants to demonstrate compliance with rules regarding inter-service sharing. Id. at 1107 para. 25.

To prevent the orbit-spectrum resource from being tied up while applicants attempt to arrange for financing, the Commission proposes both construction milestones and to require each applicant to demonstrate its basic financial qualifications prior to the applicant being eligible for a license. As implementation milestones, the Commission proposes to require each licensee to begin construction of the first two satellites of its system within one year of grant and begin construction of the remaining satellites within three years of grant. Id. at 1136 para. 84. Construction of the first two satellites must be completed within four years of grant, and the entire system must be launched and

^{18/}(...continued)

services," particularly to "rural areas that are not otherwise linked to the communications infrastructure." NPRM, 9 FCC Rcd at 1096 para. 2. The NPRM singles out non-GSO systems for their alleged ability to "potentially extend these benefits throughout the world." Id.

^{19/} In discussing the proposed coverage standard, the Commission does not address the specific reliability concerns that AMSC has raised regarding the technical proposals of the non-GSO system applicants. See supra note 9.

operational within six years of grant. Id. The Commission states that it will consider an extension to the schedule if an applicant can demonstrate that the size or complexity of its system warrants some additional time in which to complete construction or launch its system. Id.

The proposed financial standard would require applicants to provide evidence of uncommitted current assets or irrevocably committed debt or equity financing sufficient to meet the estimated costs of constructing and launching all planned satellites and operating the system for the first year. Id. at 1108-09 paras. 27-28.

The Commission proposes that, following a review of the applicants' qualifications, either it would grant licenses to all qualified entities pursuant to a sharing approach that is based on ones submitted by the non-GSO applicants and is intended to permit all qualified applicants to proceed or, if mutual exclusivity remains, the Commission would auction the spectrum or conduct a lottery. Id. at 1109-19 paras. 29-47. The Commission states that it is optimistic that all licensed systems will be built. Id. at 1112 paras. 33-34.

As to inter-service sharing, the Commission in many cases proposes to adopt certain of the recommendations of the NRMC, but in many cases concludes that it is necessary to develop a more complete record before even tentatively concluding that sharing is feasible.

With respect specifically to the proposals of Constellation, Ellipsat and LQSS to utilize feeder link spectrum in the 5/6 GHz

bands and the proposals of MSC-I and TRW for feeder links in the 20/30 GHz band, the Commission accepts the NRMC analysis that sharing among non-GSO feeder links and GSO fixed-satellite systems in these bands is feasible with coordination, but at the same time notes that it does not appear feasible to seek to implement non-GSO feeder links in bands that are heavily used by GSO systems, finding that "[c]oordinating a LEO system with every GSO satellite throughout the world would simply be too burdensome." Id. at 1130 para. 74 & n.115. The Commission further notes the NRMC's conclusion that the operations of facilities in the newly-proposed Local Multipoint Distribution Service at 27.5-30 GHz would cause unacceptable interference into MSS feeder link operations. Id. at 1131 para. 76. The Commission is not prepared to propose any of the specific feeder link recommendations of the non-GSO applicants. Id. at 1131 para. 77.

With respect to sharing of MSS mobile links with fixed services in the 2.4 GHz downlink band, the Commission accepts the NRMC finding that interference problems caused by MSS downlinks that exceed the prescribed power levels could be coordinated, and expresses a willingness to consider relocating the fixed service users. Id. at 1125 para. 62. At the same time, however, the Commission notes that the record has been developed without a representative of affected terrestrial operators and the Commission seeks input from that group. Id. The Commission also notes the inadequacy of the record regarding Instructional Television Fixed Service ("ITFS") and Multichannel Multipoint

Distribution Service ("MMDS") operations in the adjacent 2500-2690 MHz band, with respect to which the NRMC had made a finding that there was a serious potential for out-of-band interference into MSS downlinks. Id. at 1126 para. 63. The Commission poses a series of over a dozen specific questions to interested parties with regard to the ITFS/MSS sharing issue. Id. at 1127 para. 65.

The Commission also finds the record to be insufficient with respect to sharing with ISM operations in the 2400-2500 MHz band. Id. at 1128 para. 67. MSC1, which seeks to operate its downlinks on a secondary basis at 1616-1626.5 MHz, has contended that ISM operations will make MSS impossible in densely populated areas. Id. at 1127 para. 66.

With respect to the 1.6 GHz uplink band, the NPRM discusses sharing between MSS and the Radio Astronomy Service ("RAS"). The Commission proposes to require all mobile terminals operating in the bands to have position location capability and to preclude operation as far as 160 kilometers (100 miles) around five radio astronomy observatories around the U.S. and 50 kilometers around ten others. The Commission further proposes to preclude MSS operation for airborne terminals out to line-of-sight to RAS observatories. Id. at 1121 para. 50.

Turning to sharing with terrestrial systems outside the U.S., the Commission notes that sixteen countries spread throughout Europe, Africa and Asia have allocated the 1550-1645.5 MHz band on a primary basis to fixed services and that ground-based aeronautical radionavigation services are also operating throughout the world in the 1610-1626.5 MHz band. Id. at 1128

para. 68. The Commission states that the International Radio Regulations prohibit MSS downlinks in these bands from causing harmful interference to these operations and require MSS uplinks to operate on a non-interference basis with respect to terrestrial stations operating in accordance with the international regulations. Id. at 1128 paras. 68-69.

As to sharing between MSS and the Aeronautical Radionavigation Service and Radionavigation Satellite Service, the Commission notes the findings of the NRMC that use of the Russian Glonass system in the 1610-1616 MHz band for aircraft approach and terminal operations could "effectively nullify" the allocation of the band to MSS, and that the Commission should prohibit the use of MSS terminals on civil aircraft unless the terminal has a direct physical connection to the aircraft Cabin Communication system. Id. at 1123 para. 56. The Commission reports that it has initiated inter-agency and international negotiations regarding this sharing issue and that it is encouraged that even if the Federal Aviation Administration proceeds with its plans to use Glonass for aircraft approach and terminal operation in the U.S., the 1610-1616 MHz band will be available in the U.S. through a change in the Glonass frequency plan. Id. at 1124 para. 57.^{20/}

The NPRM also discusses service rules for users of the bands. The Commission tentatively concludes that the MSS Above 1 GHz service will be offered as a Commercial Mobile Radio Service,

^{20/} The nation of Sweden also operates radar systems in the 2.4 GHz downlink band. These systems are not discussed in the NPRM.

since it probably will be offered for profit and will make interconnected service available to the public. Id. at 1133 para. 80. The Commission recognizes that requiring common carriage operations may limit the amount of foreign participation in the non-GSO systems, which could impede international coordination of the satellites. Id. at 1134 para. 81.^{21/}

With the exception of its proposed coverage requirements, the NPRM does not address the expected reliability of the proposed non-GSO systems. Nor does the NPRM discuss space debris concerns.

Discussion

The Commission's proposal to exclude GSO systems from the newly-allocated MSS spectrum is unreasonable. AMSC has submitted the most practical and realistic proposal of any of the applicants meeting the cut-off for the bands. AMSC has shown that it needs additional spectrum to develop its system and that these bands are particularly valuable because they are the only

^{21/} In a related docket implementing the new law (modifying Section 332 of the Communications Act) that mandates regulatory parity among similar mobile service providers, AMSC urged the Commission to regulate all providers of similar mobile satellite services in the same manner. Reply Comments of AMSC in Gen. Docket No. 93-252 (November 23, 1993). The Commission interpreted AMSC's admonition as a request that AMSC be regulated as a private mobile radio service provider. Second Report and Order in Gen. Docket No. 93-252, 9 FCC Rcd 1411, 1457, para. 109 (1994). In fact, all AMSC seeks is that the Commission act in a manner that is consistent with its legislative mandate to establish true regulatory parity among similar service providers. If two providers are serving the same market and providing similar services, they should be subject to the same regulation.

generic MSS spectrum presently allocated. AMSC has also shown that GSO technology has significant advantages over non-GSO systems in providing MSS and that the non-GSO proposals remain highly speculative. The newly-allocated spectrum is too valuable to the development of MSS in the United States for the Commission to pin its hopes exclusively on the expectation that it will be able to license five speculative non-GSO systems that may not meet even the basic qualifying standards the Commission has proposed to adopt for the new MSS bands, and which in any event face numerous obstacles to obtaining spectrum. In short, the prudent approach is to allow both AMSC and the non-GSO applicants to access the newly-allocated MSS bands.

A. AMSC's Proposal Is the Most Realistic and Practical

Of all the applicants for the newly-allocated MSS bands, the proposal submitted by AMSC is by far the most realistic, practical, and capable of prompt effectuation. AMSC's MSS system does not exist merely on paper. AMSC has made very real and substantial progress toward implementing its MSS system. AMSC is currently providing the economic development benefits and state-of-the-art technological advances that the other proponents can only hope to offer, and AMSC is poised to provide service to the public next year, service that can be bolstered by access to the additional frequencies in the 1.6/2.4 GHz bands.

With hundreds of millions of actual dollars committed toward its system, and with construction of the U.S. MSS system well underway, AMSC is the one applicant in a position to put the

newly-allocated MSS spectrum to use promptly and inexpensively for the benefit of the American public. The Commission paints a glowing picture of the additional jobs, technological innovation, and ubiquitous telecommunications services to be offered by non-GSO MSS systems -- while overlooking the role that AMSC is playing and is poised to continue to play in making those benefits a reality and the damage that can be done to that effort if AMSC's system is denied access to sufficient spectrum. AMSC urgently needs additional spectrum to meet the expected demand for MSS in the U.S. and to coordinate its system internationally in the upper and lower L-bands.^{22/}

At the same time, AMSC is not seeking to exclude the other applicants from the spectrum they claim to need to develop their own systems. The non-GSO applicants have all stated that sharing is feasible and that they are prepared to go forward with access to the spectrum that they would have under a sharing arrangement. The NPRM itself concludes that the proposed sharing arrangement should provide at least enough spectrum for all the non-GSO applicants. Consequently, there is no harm in AMSC going

^{22/} The Commission's initial decision in licensing MMDS (wireless cable) systems is instructive of the need to allow AMSC access to the newly-allocated MSS bands. In its wireless cable proceeding, the Commission divided the eight available video channels into two channel groups in order to establish competition between the two MMDS operators. Report and Order, Instructional TV Fixed Service, 94 F.C.C.2d 1203, 1245 para. 105 (1983). The result was too little spectrum for any successful systems and no added competition where it was truly needed: in the broader cable television market. Not until seven (7) years after it first made this decision was the Commission able to correct it. Report and Order, Gen. Docket Nos. 90-54, 80-113, 5 FCC Rcd 6410, 6411, paras. 8-9 (1990).